



MDC Resource Science

Growth and Regeneration of Eastern Redcedar Following Thinning in Southwest Missouri

Science Notes



Growth and Regeneration of Eastern Redcedar Following Thinning in Southwest Missouri

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Objective

Determine short-term impact of thinning on growth and natural regeneration of eastern redcedar.

Summary

Eastern redcedar is an ecologically and economically valuable tree species in Missouri. However, rarely is redcedar managed sustainably. Managers in southwest Missouri are interested in sustainably managing redcedar, but are uncertain about the best way to accomplish this goal. This pilot study was initiated to investigate the impacts of forest management on redcedar growth and regeneration with a goal of providing science-based information to managers seeking to manage redcedar forests sustainably.

Results

Compared to the unthinned plot, basal area was approximately 50% lower in the heavy thinning and 30% lower in the light thinning immediately after treatment (Table 1). Three years after treatment, basal area increased by 25% in heavy thinning and 12% in light thinning compared to 7% in unthinned plots. According to t-tests, mean diameter growth of residual redcedar trees was significantly greater in the heavy thinning plot than both light thinning and unthinned plots, and greater in the light thinning plot than the unthinned plot ($p < 0.05$).

Only 1 redcedar seedling was captured within heavy and light thinning plots, which, when expanded out to the acre, yielded 450 redcedar seedlings in each thinning treatment. No redcedar seedlings were tallied in the unthinned plot. In contrast, hardwood regeneration was tallied in all treatments and approximately 9-times and 6-times more abundant than redcedar regeneration in heavy and light thinning plots, respectively.

Management Implications

Thinning treatments similar to those implemented in this study can increase diameter growth of redcedar residual trees a few years after treatment. Although natural redcedar regeneration was more abundant in thinned plots, competitive hardwood regeneration was substantially more abundant. This suggests that thinning redcedar stands may accelerate succession to hardwood

dominance. Regenerating similar redcedar stands will likely require more intensive silvicultural practices, such as: heavier overstory removal, site preparation, artificial regeneration, and subsequent release treatments to maintain free growth.

Table 1. Attributes of eastern redcedar plots with (heavy and light) and without (none) thinning estimated immediately following (2010) and 3 years after (2013) treatment in a redcedar thinning study in southwest Missouri.

	2010	2013
Density (trees/ac)		
Heavy	1,125	1,125
Light	1,202	1,202
None	2,003	1,988
Basal area (ft²/ac)		
Heavy	63.9	80.2
Light	86.7	97.9
None	125.4	134.3
Mean DBH (in)		
Heavy	3.1	3.5
Light	3.4	3.6
None	3.2	3.3
Range of DBH (in)		
Heavy	1.5-5.5	1.5-6.0
Light	1.6-9.3	1.6-9.4
None	1.6-6.8	1.6-7.5
Redcedar regeneration (seedlings/ac)*		
Heavy		450
Light		450
None		0
Hardwood regeneration (seedlings/ac)*		
Heavy		4,046
Light		2,698
None		450

*Data collected in 2013 only

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